

REPRESENTATIVE DRAWING

FIGURE 3

TITLE

BREAD MAKER

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an exploded perspective view illustrating a bread maker according to the present invention;

FIG. 2 is an enlarged exploded perspective view of a baking tray of the bread maker according to the present invention;

FIGS. 3 through 5 are sectional views of the baking tray of the bread maker according to the present invention in a kneading process, taken along line IV-IV in FIG. 1.

FIG. 6a is an enlarged perspective view of a stopping pin of the bread maker of the present invention.

FIG. 6b is an exploded perspective view of the stopping pin of the bread maker of the present invention.

FIG. 7 is an exploded perspective view of the baking tray of a conventional bread maker.

<Reference numerals of elements>

1: main body	2: operation display panel
3: door	10: oven compartment
11: upper kneading drum	12: lower kneading drum
13: dough-blocking member	14: guide member

16: baking heater 20: baking tray assembly
30: baking tray
31: stationary tray member
32: stationary projection
33: movable tray member
34: pivot pin 35: stopping pin
35a: stationary part 35b: shock-absorbing part
40: tray holder member
41: stationary projection accommodating part
42: pivot pin guide groove
43: stopping pin guide groove
50: mixing bag 50

BACKGROUND OF THE INVENTION

The present invention relates to a bread maker, and more particularly to a bread maker in which a noise occurred when a movable tray member strikes a stationary tray member can be reduced.

Generally, making bread is so complicated that bread is made by using a bread maker which automatically performs multiple steps such as kneading, leavening and baking of raw materials for bread.

Typically, a bread maker in which dough is knead by reciprocating a mixing bag up and down includes: a main body provided with an oven compartment; and a pair of

parallel kneading drums which are rotatably disposed in upper and lower parts of the oven compartment to wind opposite ends of a mixing bag filled with raw materials for bread in clockwise and counterclockwise directions.

Further, in a lower part of the oven compartment is placed a baking tray which can be slid out of the oven compartment and contains kneaded dough between the upper and lower kneading drums.

As shown in FIG. 7, a conventional bread maker includes tray holder members 40 which are placed in lower parts of opposite sidewalls of a stationary tray member 31 and slidably coupled with a guide mounted on the oven compartment, wherein a plurality of groove parts 142 are formed in the tray holder member 40.

In lower parts of opposite sidewalls of a movable tray member are formed a plurality of projections which are projected from surfaces of the opposite sidewalls of the movable tray member and accommodated in the groove parts of the tray holder member.

With this configuration, the mixing bag is reciprocated up and down by the stationary and movable tray members, striking the baking tray, so that a predetermined noise is occurred.

Here, a user has required a bread maker having a small noise because the bread maker is usually used at home; the

present invention is developed to meet this requirement.

ASPECT OF THE INVENTION

Accordingly, it is an aspect of the present invention to provide a bread maker in which a kneading process is performed with silence.

CONFIGURATION OF THE INVENTION

The foregoing and other aspects of the present invention are also achieved by providing a bread maker comprising: a main body forming an oven compartment; and a pair of kneading drums which are spaced from each other in upper and lower parts of the oven compartment and hold opposite ends of a mixing bag, respectively, the bread maker further comprising: a stationary tray member which is disposed between the pair of kneading drums; a movable tray member which faces the stationary tray member to form a slit for passing the mixing bag and contains raw materials for bread; tray holder members which are combined with the stationary tray member and support the movable tray member; pivot pins mounted on the movable tray member and supported by the tray holder, so that the movable tray member is alternated between an open state in which the movable tray member is apart from the stationary tray member and a closed state in which the movable tray member

is adjacent to the stationary tray member; and a stopping pin mounted on the movable tray member and contacted with the tray holder member, thereby setting limits on an approach of the movable tray member to the stationary tray member to maintain a predetermined gap between the stationary and movable tray members in the closed state of the movable tray member.

According to an aspect of the invention, the stopping pin is made of elastic material.

According to an aspect of the invention, the stopping pin comprises a stationary part securely coupled with the movable tray member and a shock-absorbing part of elastic material which is coupled with the stationary part and contacted with the tray holder.

According to an aspect of the invention, the pivot and stopping pins are located at a same height from the bottom of the movable tray member, a plurality of guide grooves are formed in the tray holder members for accommodating the pivots and stopping pins, and the bottom of stopping pin guide grooves to accommodate the stopping pins are located higher than the bottom of pivot pin accommodating grooves to accommodate the pivot pins.

According to an aspect of the invention, the pivot and stopping pins are located at a same height from the bottom of the movable tray member, a plurality of guide grooves

are formed in the tray holder members to accommodate the pivot and stopping pins, the bottoms of the plurality of guide grooves are located at a same height from the bottom of the tray holder members, and the stopping pins are accommodated apart from the bottoms of the stopping pin guide grooves accommodating the stopping pins in the closed state of the movable tray member.

The embodiments are described below in order to explain the present invention by referring to the figures.

As shown in FIG. 1, a bread maker according to the present invention comprises: a main body 1 provided with an oven compartment 10; a door 3 in the front of the main body 1 to rotatably open and close a front opening of the oven compartment 10; and an operation display panel 2 in a front side of the main body 1 to display an operation state of the main body 1.

In upper and lower parts inside of the oven compartment 10 are placed upper and lower kneading drums 11 and 12 which are disposed in parallel to wind upper and lower ends of a mixing bag 50 filled with raw materials for bread in clockwise and counterclockwise directions. Between the upper and lower kneading drums 11 and 12 is placed a pair of dough-blocking members 13 preventing the raw materials kneaded in the mixing bag 50 from being moved toward the upper kneading drum 11.

In the lower part of the oven compartment 10, a baking tray 30 which can be slid out of the oven compartment 10 and contains kneaded materials for bread therein is provided between the upper and lower kneading drums 11 and 12.

The baking tray 30 is of a box shape having a top opening by combining stationary and movable tray members 31 and 33 of an "L" shaped section symmetrical to each other and a slit is formed at the bottom of the baking tray 30.

As shown in FIGS. 2 through 4, in lower parts of opposite sidewalls of the stationary tray member 31, stationary projections 32 to be securely combined with the pair of tray holder members 40 are projected from surfaces of the opposite sidewalls. In lower parts of opposite sidewalls of the movable tray member 33, pivot pins 34 and stopping pins 35 are provided on surfaces of the opposite sidewalls.

As shown in FIGS. 1 and 3 through 5, the tray holder members 40 are slidably coupled with guide members 14 mounted on opposite sidewalls inside of the oven compartment 10 to face each other. In parts to be combined with the stationary tray member 31, stationary projection accommodating parts 41 in which the stationary projections 32 of the stationary tray member 31 are inserted are grooved in the tray holder members 40. In parts to be

combined with the movable tray member 33, a plurality of guide grooves 42 and 43 in which a pivot pin 34 and a stopping pin 35 are accommodated are formed in the tray holder members 40.

If the stationary projections 32 of the stationary tray member 31 are inserted in the stationary projections accommodating parts 41 of the tray holder member 40, the stationary tray member 31 is securely mounted on the tray holder members 40. The pivot pin 34 of the movable tray member 33 is accommodated in pivot pin guide grooves 42 of the tray holder members 40, so that the movable tray member 33 can be alternated between an open state in which the movable tray member 33 is positioned apart from the stationary tray member 31 and a closed state in which the movable tray member 33 is positioned adjacent to the stationary tray member 31. The stopping pin 35 of the movable tray member 33 is accommodated in a stopping pin guide groove 43, so that the stopping pin 35 sets limits on an approach of the movable tray member 33 to the stationary tray member 31 so as to maintain a predetermined gap width between the stationary and the movable tray members 31 and 33. Hence, the movable tray member 33 is movably mounted on the tray holder member 40.

It is to be described how the stopping pin 35 sets limits on an approach of the movable tray member 31 to the

stationary tray member 31. As shown in FIG. 4, the pivot and stopping pins 34 and 35 are located at a same height from the bottom of the movable tray member 33 but the bottom of the stopping pin guide groove 43 accommodating the stopping pin is located higher than the bottom of the pivot pin guide groove 42 accommodating the pivot pin 34.

Further, as shown in FIG. 5, the pivot pin 34 and the stopping pin 35 are located at a same height from the bottom of the movable tray member 33 and the bottoms of the plurality of guide grooves 42 and 43 accommodating the stopping and pivot pins 34 and 35 are located at a same height from the lower surface of the tray holder member 40. However, in the close state of the movable tray member 33, the pivot pin 35 is accommodated apart from the bottom of the pivot pin guide groove 43 accommodating the pivot pin 35.

If the stationary and movable tray members 31 and 33 are mounted on the tray holder member 40 to face each other, then the baking tray 30 of a box shape having a top opening for containing the raw materials for bread is formed. Along the line where the stationary tray member 31 meets the movable tray member 31, a predetermined gap is formed between side edges of the stationary and movable tray members 31 and 33 and a slit 21 is formed at the bottom of the baking tray 30.

With this configuration, one end of the mixing bag 50 contained inside of the oven compartment 10 is wound by the upper kneading drum 11. Then, the other end of the mixing bag 50 passes through the pair of dough-blocking members 13 and the slit formed at the bottom of the baking tray 30 and then is wound by the lower kneading drum 12. The mixing bag 50 filled with raw materials for bread is reciprocated up and down by the upper and lower kneading drums 11 and 12 during a kneading process, so that the raw materials for bread are kneaded between the pair of dough-blocking members 13 and the baking tray 30.

After completing this kneading process, the mixing bag 50 is released from the upper kneading drum 11 because only the lower kneading drum 12 is rotated. Then, the mixing bag 50 passes through the pair of dough-blocking members 13 and finally the slit 21 formed at the bottom of the baking tray 30. Here, when the mixing bag 50 passes through the slit 21 of the baking tray 30, the raw materials for bread contained in the mixing bag 50 cannot pass the slit of the baking tray 30, so that they are separated from the mixing bag 50 and contained in the baking tray 30. However, the mixing bag 50 can pass the slit of the baking tray 30 and is wound by the lower kneading drum 12. Thereafter, the raw materials for bread contained in the baking tray 30 are baked by the baking

heater 16.

Here, as shown in FIG. 3, while the mixing bag 50 filled with raw materials for bread is reciprocated up and down through the slit formed between the stationary and movable tray members 31 and 33 during the kneading process, the movable tray member 33 is alternated between the open and closed states according to the mixing bag 50 moved up and down through the slit. It is because that the movable tray member 33 is movably mounted on the tray holder member 40.

Here, when the mixing bag 50 introduced between the slit is moved up, also the movable tray member 33 is moved up with the mixing bag 50, which moves also the stopping pin 35 up. Thus, the open state is formed between the stationary and movable tray members 31 and 33. In contrast, when the mixing bag 50 is moved down, also the movable tray member 33 is moved down with the mixing bag 50. Therefore, the stopping pin 35 is accommodated in the stopping pin guide groove 43 and the closed state is formed between the stationary and movable tray members 31 and 33.

Here, in the closed state of the movable tray member 33, the stopping pin 35 sets limits on the approach of the movable tray member 33 to the stationary tray member 31 by being accommodated in the stopping pin guide groove 43, so

that a predetermined gap is formed between side edges of the stationary and movable tray members 31 and 33. Then, the movable tray member 33 is returned to the position to face with the stationary tray member 31, which prevents the movable tray member 33 from forcefully striking the side edge of the stationary tray member 31. Further, the direct contact between the stationary and movable tray members 31 and 33 can be prevented.

Further, as shown in FIG. 6a, if the stopping pin 35 is of materials with elasticity, then a noise occurred when the stopping pin 35 is accommodated in the stopping pin guide groove 43 of the movable tray member 33 can be reduced as the movable tray member 33 is moved down.

Further, as shown in FIG. 6b, the stopping pin 35 may be divided into a stationary part 35a securely coupled with the movable tray member 33 and a shock-absorbing part 35b with elasticity which is connected with the stationary part 35a and accommodated in the stopping pin guide groove 43.

It is preferable that the materials with elasticity are of heat-resistance, such as Teflon or heat-resistant rubber.

EFFECT OF THE PRESENT INVENTION

As described above, according to the present

invention, the noise occurred between the movable tray member and the stationary tray member can be reduced, so that the kneading process is completed with silence.